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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
LE, LANA N

ART UNIT	PAPER NUMBER
2684	

DATE MAILED: 09/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/400,974	SATO ET AL.	
	Examiner	Art Unit	
	Lana Le	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-40 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-3, 7-8, 11, 14, 33, and 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Brunner et al (US 6,301,470).

Regarding claim 1, Brunner et al discloses a millimeter band signal transmitting/ receiving system (within the 900 MHz range by FCC standard; col 6, lines 50-63; Fig. 2 and hereafter), comprising a transmitter MS1 transmitting a signal wave with a millimeter band a propagation path forming portion forming at least one indirect propagation path 1 from MS1 towards the ceiling and to the receiver 6 for propagation of the signal wave from ; a receiver capable of receiving simultaneously a plurality of the signal waves from a plurality of propagation paths including a line of sight propagation path (see LOS path 1) and the at least one indirect propagation path, and receiving the signal wave from at least one of the plurality of propagation paths(col 5, lines 20-25; col 4, lines 56-65).

Regarding claim 2, Brunner et al discloses the millimeter band signal transmitting/receiving system according to claim 1, wherein the propagation path forming portion includes a reflector (ceiling) arranged to reflect the signal wave transmitted from the transmitter and direct the reflected signal wave to the receiver 30 (fig. 2).

Regarding claim 3, Brunner et al discloses the millimeter band signal transmitting /receiving system according to claim 2, wherein the reflector (ceiling) is arranged substantially almost in parallel to a line of sight 1 directly to 30 from MS1 between the transmitter and the receiver (fig 2).

Regarding claim 7, Brunner et al further discloses the millimeter band signal transmitting/receiving system according to claim 2, wherein a plurality of the reflectors (block on the right and bottom of MS1) are arranged to form the plurality of propagation paths for propagating the signal waves to the receiver (fig. 2).

Regarding claim 8, Brunner et al discloses the millimeter band signal transmitting/receiving system according to claim 1, wherein the receiver 30 always simultaneously receives the plurality of signal waves 1 from the plurality of propagation paths in a normal state (fig. 2).

Regarding claim 11, Brunner et al discloses the millimeter band signal transmitting/receiving system, comprising a plurality of transmitters MS1 and MS2 and for a millimeter band and a receiver 30 arranged to simultaneously receive a plurality of signal waves output from the plurality of transmitters, the plurality of signal waves

transmitted from the plurality of transmitters having a same frequency (col 4, lines 54-57).

Regarding claim 14, Brunner the millimeter band signal transmitting/receiving system according to claim 11, wherein the receiver always simultaneously receives the plurality of signal waves in a normal state.

Regarding claim 33, Brunner et al discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein the receiver 30 receives the signal wave through the line of sight propagation path 1 when the line of sight propagation path is not blocked from MS1 directly to receiver 30 (fig. 1).

Regarding claim 35, Brunner et al discloses the millimeter band signal transmitting/ receiving system of claim 11, wherein the receiver 30 receives one of the plurality of signal waves through at least one line of sight propagation path 1 from MS1 directly to 30 between at least one of the plurality of transmitters MS1 and MS2 and the receiver (Fig. 2).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 18-26, 31-32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner et al (US 6,301,470) in view of Lewiner et al (US 5,926,768).

Regarding claim 18, Brunner et al discloses a millimeter band signal transmitting/ receiving system, comprising: at least one transmitter transmitting a signal through an associated transmit antenna along a plurality of propagation paths 1 of the signal formed by the associated transmit antenna including a line of sight propagation path between the associated transmit antenna and a receive antenna (col 5, lines 20-25; col 4, lines 56-65); a receiver 30 receiving the signal through the receive antenna, wherein, in a normal state when the line of sight propagation path is unobstructed (see direct path 1 from MS1 to 30), the receiver receives the signal through each of the plurality of propagation paths 1 including the line of sight propagation path (fig. 2),

Brunner didn't specifically disclose wherein, in an obstructed state when the line of sight propagation path is obstructed, the receiver receives the signal through each of the plurality of propagation paths except the line of sight propagation path. Lewiner et al further discloses wherein, in an obstructed state when the line of sight propagation path is obstructed, the receiver 2 receives the signal through each of the plurality of propagation paths except the line of sight propagation path (see fig. 1 and hereafter; col 5, lines 13-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to that in severe multipath cases, direct LOS path is not receivable.

Regarding claim 19, Brunner et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein at least a portion of the plurality of propagation paths are formed by at least one reflector (top ceiling) (fig. 2).

Regarding claim 20, Brunner et al discloses the millimeter band signal transmitting/ receiving system of claim 19, wherein the at least one reflector (ceiling) has a surface arranged substantially parallel to the direct path 1(fig. 2).

Regarding claim 21, Lewiner et al discloses the millimeter band signal transmitting/ receiving system of claim 19, wherein the at least one reflector includes two reflectors M (fig 1).

Regarding claim 22, Lewiner et al discloses the millimeter band signal transmitting/ receiving system of claim 21, wherein at least one of the plurality of propagation paths from mobile 5 of the signal is formed by reflection from each of the two reflectors M (fig. 1).

Regarding claim 23, Lewiner et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein the at least one transmitter is a single transmitter 5.

Regarding claim 24, Brunner et al and Lewiner et al discloses the millimeter band signal transmitting/ receiving system of claim 18, the examiner takes official notice that wherein the at least one transmitter includes two transmitters and two associated transmit antennas, wherein each of the two associated transmit antennas provides a separate line of sight propagation path to the receive antenna. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use two

transmitters in order to assure that the signal can be transmitted via diversity transmission.

Regarding claim 25, Brunner et al and Lewiner et al discloses the millimeter band signal transmitting/ receiving system of claim 24, the examiner takes official notice wherein the two transmitters are further synchronized with each other.

Regarding claim 26, the examiner takes further official notice that the millimeter band signal transmitting/ receiving system of claim 25, wherein the two transmitters share a common local oscillator.

Regarding claim 31, Brunner et al further discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein the receive antenna is a single receive antenna at 38.

Regarding claim 32, Brunner et al further discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein the receiver simultaneously receives the signal through each of an unobstructed direct plurality of propagation paths 1.

Regarding claim 34, Lewiner et al further discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein the receiver receives the signal wave only through the at least one indirect path when the line of sight propagation path is blocked (col 5, lines 13-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to only receive indirect paths in order to allow the receiver to receive the signal even in severe multipath environments.

5. Claims 4-6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner et al (US 6,301,470) in view of Freeburg (US 5,355,520).

Regarding claim 4, Freeburg further discloses the millimeter band signal transmitting/receiving system according to claim 2, wherein the reflector has thin film including aluminum (col 3, lines 23-25, col 6 lines 1-24). It would have been obvious to one of ordinary skill in the art to use a certain kind of material such as aluminum or metal to reflect signals.

Regarding claim 5, Freeburg further discloses the millimeter band signal transmitting/receiving system according to claim 2, the reflector has a surface covered by an insulating material (col 3, lines 23-25; col 6, lines 1-24). It would have been obvious to one of ordinary skill in the art that the buildings or objects which are used as reflectors has insulating materials so that reflection can occur without signal absorbtion.

Regarding claim 6, Freeburg further discloses the millimeter band signal transmitting/receiving system according to claim 2, wherein the reflector has a surface covered by a transparent insulating material (col 6, lines 14-24). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the reflective surface to redirect the path of RF energy.

Regarding claim 9, Freeburg discloses the millimeter band signal transmitting/receiving system according to claim 1, wherein the receiver and the transmitter are provided inside a house, the propagation path includes a structural component defining an internal space of the house and reflecting a signal wave transmitted from the transmitter, and the transmitter is spaced by a prescribed distance

from the structural component defining the internal space of the house for transmitting the signal wave with the millimeter band at a prescribed transmission angle (col 3, lines 15-55). It would have been obvious to one of ordinary skill in the art at the time the invention was made to define an internal space for the transmitter and the receiver in order to transmit at closed range at a specific slant from the horizontal/vertical line.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg et al and Brunner et al as applied to claim 9 above, and further in view of Wax et al (US 6,249,680).

Regarding claim 10, Wax further discloses the millimeter band signal transmitting/receiving system according to claim 9, wherein each of the prescribed distance and the prescribed transmission angle is determined depending on a region for propagation of the plurality of signal waves and a positional relationship between the transmitter and the receiver (col 4, lines 65-67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a positional relationship in order to determine the accurate location of the transmitter.

7. Claim 15-17 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg (US 5,355,520) in view of Brunner et al (US 6,301,470).

Regarding claim 15, Freeburg discloses a house provided with a millimeter band signal transmitting/receiving system, comprising a structural component defining an internal space and a millimeter band signal transmitting/receiving system, wherein the

millimeter band signal transmitting/receiving system includes a transmitter transmitting a signal wave with a millimeter band a propagation path forming portion arranged in the structural component for forming at least one propagation path for propagation of the signal (col 3, lines 15-55 and col 5, lines 9-20). Freeburg didn't further disclose a receiver simultaneously receiving a plurality of signal waves through a plurality of propagation paths including a line of sight propagation path and the at least indirect one propagation path. Brunner et al further discloses a receiver 30 (fig. 2) simultaneously receiving a plurality of signal waves through a plurality of propagation paths including a line of sight propagation path 1 directly to 30 to the transmitter and the at least indirect one propagation path 1 indirectly to 30 (col 5, lines 20-25; col 4, lines 56-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide simultaneous diversity reception at the receiver in order to receive different multipath signals from different directions.

Regarding claim 16, Freeburg further discloses a house provided with a millimeter band signal transmitting/receiving system according to claim 15, wherein the propagation path forming portion has a reflector reflecting an output from the transmitter and the reflector is arranged on a surface of the component (col 3, lines 35-55).

Regarding claim 17, Freeburg further discloses a house provided with a millimeter band signal transmitting/receiving system according to claim 15, wherein the propagation path forming portion has a reflector 18 reflecting an output from the transmitter and the reflector is arranged inside the component (col 2, lines 30-35).

Regarding claim 36, Brunner et al further discloses the house provided with a millimeter band signal transmitting/receiving system of claim 15, wherein the receiver 30 receives one of the plurality of signal waves through the line of sight 1 from directly to 30 propagation path when the line of sight propagation path is not blocked (fig. 2).

8. Claims 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg et al in view of Brunner et al and further in view of Lewiner et al (US 5,926,768).

Regarding claim 37, Lewiner et al further discloses the millimeter band signal transmitting/ receiving system of claim 15, wherein the receiver only receives the plurality of signal waves through the at least one indirect propagation path from when the line of sight propagation path is blocked (col 5, lines 13-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to receive only the indirect paths in severe multipath cases where the line of sight is hindered by some object.

9. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner et al in view of Lewiner et al as applied to claim 18 above, and further in view of Freeburg et al (US 5,355,520).

Regarding claim 30, Freeburg et al further discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein a portion of the plurality of propagation paths are formed by interaction with a structural component of a building

(fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to interact with a building in order for the signals to propagate within closed range inside a predefined space.

10. Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner et al in view of Kagami (US 5,479,443).

Regarding claim 12, Brunner et al discloses the millimeter band signal transmitting/receiving system according to claim 11, Kagami further discloses wherein each of the plurality of transmitters includes a local oscillator oscillating at a prescribed local oscillator frequency for generating the signal wave at the same frequency (col 9, lines 25-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a common frequency for the transmitters to generate simultaneous signals.

Regarding claim 13, Kagami further discloses the millimeter band signal transmitting/receiving system according to claim 11, wherein the local oscillators are in synchronization with each other. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a common frequency for the transmitters to generate simultaneous signals.

11. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner et al in view of Lewiner et al as applied to claim 18 above, and further in view of Evans et al (US 5,920,813).

Regarding claim 27, Evans et al discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein the signal is a video signal (col 4, lines 65- col 5, line 2; col 8, lines 13-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the video signals to use microwave frequencies.

11. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner et al and Lewiner et al and further in view of Keskitalo et al (US 6,128,486).

Regarding claim 28, Keskitalo further discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein the line of sight propagation path between the associated transmit antenna and the receive antenna is formed in a side lobe B of the associated transmit antenna. It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a side lobe to signal the incoming beam direction of the signal from the transmitter.

Regarding claim 29, Keskitalo et al further discloses the millimeter band signal transmitting/ receiving system of claim 18, wherein the plurality of propagation paths of the signal except the line of sight propagation path are formed in a main lobe A (fig. 3) of the associated transmit antenna. It would have been obvious to one of ordinary skill

in the art at the time the invention was made to receive indirect signals via a separate lobe than the line of sight path in order to distinguish from what direction the signal is coming from.

13. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunner et al in view of Keskitalo et al (US 6,128,486).

Regarding claim 38, Keskitalo et al further discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein the at least one indirect propagation path is formed in a main lobe A (fig. 3) of a transmit antenna. It would have been obvious to one of ordinary skill in the art at the time the invention was made to receive indirect signals via a separate lobe than the line of sight path in order to distinguish from what direction the signal is coming from.

Regarding claim 39, Keskitalo et al discloses the millimeter band signal transmitting/ receiving system of claim 1, wherein the line of sight propagation path is formed in a side lobe B of a transmit antenna (fig. 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a side lobe to signal the incoming beam direction of the signal from the transmitter.

14. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freeburg et al (US 5,355,520) and Brunner et al and further in view of Keskitalo et al (US 6,128,486).

Regarding claim 40, Keskitalo discloses the millimeter band signal transmitting/ receiving system of claim 15, wherein the line of sight propagation path is formed in a side lobe B of a transmit antenna (fig. 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a beam lobe to signal the incoming beam direction of the signal from the transmitter.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lana Le whose telephone number is (703)308-5836. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Hunter can be reached on (703)308-6732. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9314 for regular communications and (703)872-9315 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-6750.

Lana Le

August 26, 2002

TUANH CONG LE
PRIMARY EXAMINER